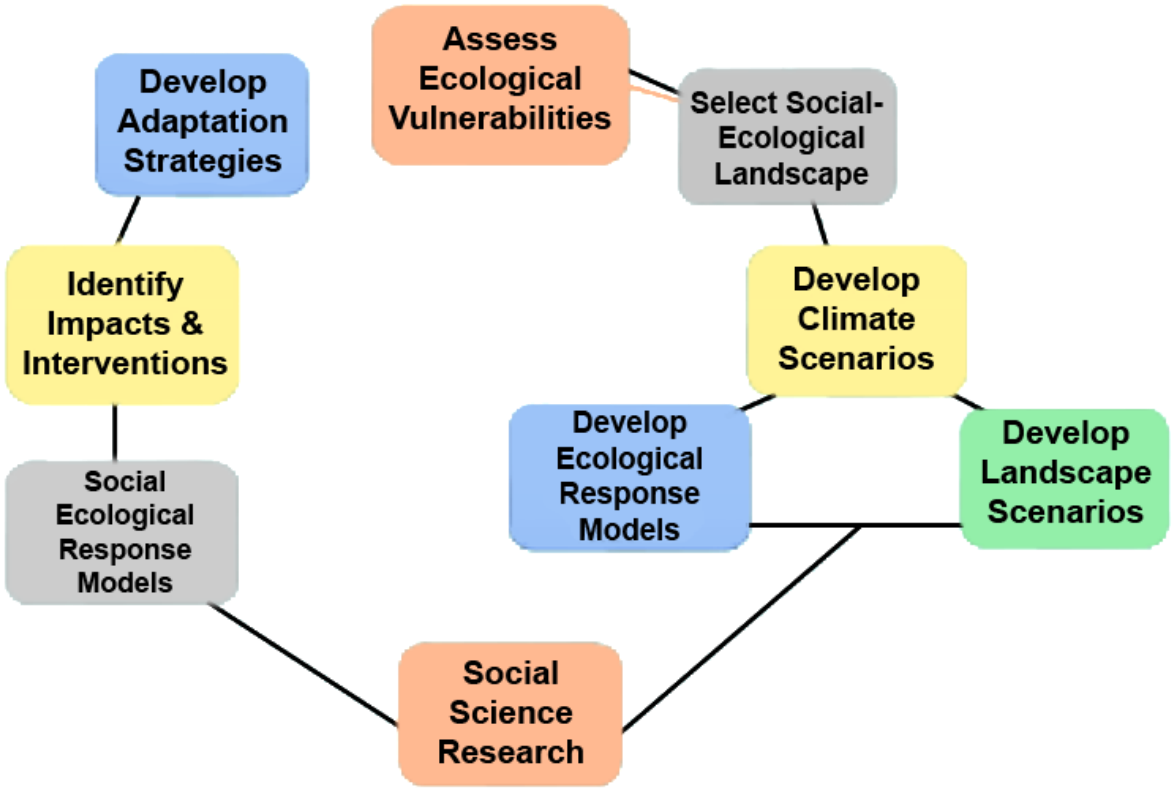
Project Update – March 7, 2017

Engaging Stakeholders to Develop Social-Ecological Adaptation Strategies
- by Nina Burkardt

The project team, funded by the NC CSC, worked in two river basins in southwestern Colorado (San Juan and Gunnison) to focus on five objectives: 1) understand social-ecological vulnerabilities, 2) create scenarios and models to facilitate decision making, 3) develop actionable adaptation strategies, 4) identify institutional arrangements needed for adaptation, and 5) document and transfer best practices. The team was interested in the intersection of the climate system, the ecological system, and the social system. Social and natural scientists worked together and with many stakeholders to achieve these objectives.

Managers were engaged in selecting the landscapes for the study; working with scientists in developing ecological response models; participating in interviews, focus groups, and workshops; developing social-ecological models, and developing adaptation strategies. The figure below illustrates the primary steps in the study.



Social-Ecological Adaptation Response Framework
(Adapted from Cross et al. 2012, Stein et al. 2014, and Murphy et al. 2016)

As an example, one of the adaptation targets selected in the Gunnison Basin was the sagebrush landscape. The choice of this landscape was related to its presumed social and ecological

vulnerability, based on knowledge of local stakeholders and scientific evidence. Ecological response models were developed to assess the climate impacts to sagebrush shrublands under three plausible climate scenarios developed by the climate scientist member of the team. These were identified as: “warm and wet,” “hot and dry,” and “feast or famine.” Social science research included interviews, focus groups, and workshops with stakeholders from both the public and private sectors. This process was intended to develop an understanding of the use, importance, and status of the targeted landscapes; how changes to targets might affect human communities, and different approaches to dealing with uncertainty.

To identify climate impacts and interventions, workshops were convened with stakeholders and scientists to apply two techniques for developing diagrams articulating social and ecological impacts of climate change and possible interventions. One technique was Situation Analysis, developed by the Conservation Measures Partnership, and the other was Chain of Consequences, developed by the U.S. Geological Survey/DOI. Both methods allow for active participation in “what if” exercises to envision outcomes and potential interventions. Interventions are defined as elements in the system that can be manipulated or influenced through management and/or conservation actions; they are starting points for developing in-depth adaptation strategies, policies, and actions.

The research team used the results of the workshops to select the highest priority adaptation strategies for further development. The three top strategies across the three climate scenarios include “identify and protect refugia,” “proactive treatment for resilience,” and “assist and allow for transformation." Adaptation strategies were defined as “management efforts designed to help nature and people prepare for and adjust to climate change and associated impacts.”

Final adaptation workshops allowed participants to consider ways to develop and implement adaptation actions to manage for these highest priority strategies. Participants also discussed challenges and opportunities for implementing these strategies.

Overall, some of the high-level lessons from this project include the need to accept and embrace social and ecological transformation; the importance of using bio-climatic models to help visualize change, and the usefulness of the Social-Ecological Adaptation Planning Framework for organizing and executing the project in a manner that provided useful information for managers and researchers in the face of an uncertain future.